

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ARIZONA
TUCSON FIELD OFFICE**

EA #: AZ-420-2005-002

Project Name: Little Joe Spring Fish Habitat Enhancement and Reestablishment of Special Status Aquatic Vertebrates

BLM Contact Person: Jeff Simms, Fishery Biologist

Legal Description and Map Name: T.18 S., R. 21 E., Sec. 29, SE, NW
Land 7.5" USGS Topographic Map

I. INTRODUCTION

Background:

The Bureau is working to improve the status of federally listed species in Arizona. When opportunities arise to translocate fish and frogs to perennial springs and small streams, the habitat is assessed and limitations for priority species are taken into account. Where practicable, the Bureau will make an effort to improve the limiting conditions to improve the suitability of habitat that, otherwise, would not likely suffice.

The Need for the Proposal:

The proposed project is entirely within the San Pedro Riparian National Conservation Area (SPRNCA). Enabling legislation for the SPRNCA directed the BLM to "conserve, protect and enhance" resources including aquatic habitat, fish and wildlife. The BLM is responsible for assisting the USFWS with actions that assist in the recovery of Threatened and Endangered species. The San Pedro River and associated wetlands once harbored 13 native fishes (Jackson et al. 1987). Today the system supports a relict native fish community of 2 species surviving in adverse conditions as a result of diminishing surface flows and a multitude of invasive exotic fishes and an aggressive species of crayfish.

The Gila topminnow (*Poeciliopsis occidentalis*), and desert pupfish (*Cyprinodon macularius*) were found in the San Pedro River system historically. Today, they both are listed as endangered species and are in need of actions that improve their status as outlined in the Sonoran topminnow (Gila and Yaqui) Recovery Plan (USFWS 1984) and desert pupfish recovery plan (USFWS 1993), respectively. The Chiricahua leopard frog (*Rana chiricahuensis*) is a federally listed Threatened species and is in decline in Arizona. It has been lost from the San Pedro but still occupies a spring in the Dragoon Mountains (Mike Sredl Arizona Game and Fish Dept., Pers. Comm.). The Huachuca water umbel (*Lileopsis schaffneriana* var *recurva*) is found in the San Pedro River within the San Pedro RNCA.

The proposed action would enhance fish, frog, and plant habitat at Little Joe Spring through excavation of a small shallow pool or set of pools totaling up to 600 ft² (10ft. by 60ft. by 3 ft deep). Spoils of approximately 70 cubic yards would be placed along the existing dike that currently impounds the spring flow. A single backhoe would be driven from the parking area to the spring using the route with least vegetation disturbance and return using the same route.

No topminnow or pupfish would be transplanted until the ponds are excavated and sufficient time has passed for water quality to stabilize and aquatic ecosystem functions related to the food web have progressed sufficiently. The spring and associated cienega will be surrounded by a frog-proof fence of approximately 500 feet in length and 30 inches high. The fence would require posts every 10 feet. The hardware cloth mesh would be ¼ inch and buried 18 inches to 2 feet deep in order to secure the perimeter from rodent holes that would allow frogs to pass under the fence. The trench for the buried hardware cloth would be excavated using a lightweight trencher with a blade width of 6 inches or less.

Conformance with Land Use Plan: The proposed action is in conformance with the San Pedro River Riparian Management Plan and EIS (page 22). The approval date for the Record of Decision for the Approval of the San Pedro River Riparian Management Plan and EIS (Final) was June 1989.

This proposed action has been reviewed to determine if it conforms with the land use plan terms and conditions as required by 43 CFR 1610.5, BLM MS 1617.3.

Relationship to Statutes, Regulations or Other Plans or Policies:

50 CFR §402.01 Directs Federal agencies to carry out conservation programs for listed species under the Endangered Species Act. Conservation is "...to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures of pursuant to this Act are no longer necessary." Little Joe Spring has been identified as a likely location for the reintroduction of Gila topminnow, desert pupfish, and lowland leopard frog.

Public Law 100-696, Section 101 of the Arizona-Idaho Conservation Act of 1988 provides for the establishment of the San Pedro Riparian National Conservation Area, and section 102(a) directs the Secretary of Interior to manage the conservation area in a manner that conserves, protects, and enhances the riparian area and other resource values. The San Pedro RNCA Habitat Management Plan was finalized in 1993 (USBLM 1993). The plan objective for the re-establishment of extirpated species is stated as follows: "improve the biological diversity of the NCA by re-establishing extirpated plant, bird, mammal, and fish species, using standard AGFD and BLM procedures, by 2005."

The proposal is authorized under the Federal Land Policy and Management Act of 1979 (43 U.S.C. 1701 et seq.) and under the regulations contained in 43 CFR 8223 (Research Natural Areas), BLM manual 6840 – Special Status Species Management, and BLM manual 1745 – introduction, transplant, augmentation, and reestablishment of fish, wildlife, and plants.

The proposed action is located within the 350 acre St. David Cienega Research Natural Area. Management guidance for this RNA is to prohibit developments and new rights-of-way, prohibit overnight camping and campfires, encourage avoidance by recreation users, preserve and enhance vegetation communities, place signs where needed along boundaries, control exotic vegetation, prohibit the introduction of non-native species, and preclude vehicular traffic (USBLM 1989, p. 26).

II. THE PROPOSED ACTION AND ALTERNATIVES

Proposed Action: The proposed action is to create open water habitat for Gila topminnow, desert pupfish, Chiricahua leopard frog and Huachuca water umbel where a mature wetland has grown in with vegetation nearly eliminating open water. It will be necessary to have bullfrog proof fencing in order to stem the influx of the local bullfrog population once frogs are translocated to the site. Interpretive signing will be used to stem vandalism and to provide visitors with the information about the ecology and conservation value of the Little Joe Spring site.

- **Aquatic Habitat Enhancement.** The proposed action would enhance Little Joe Spring by excavation of a small continuous, shallow pool or set of pools measuring approximately 600 ft² (10ft. by 60ft. by 3 ft. deep). Spoils of approximately 70 cubic yards would be placed along the existing dike that currently impounds the spring flow. A single backhoe would be driven from the parking area to the spring using the route with the least possible vegetation disturbance and

return using the same route. The AGFD and USFWS would move fish Gila topminnow, desert pupfish, Chiricahua leopard frogs, and Huachuca water umbel under state and federal authority and permits.

- **Construction of Frog Proof Fencing.** The spring and associated cienega would be surrounded by a frog-proof fence of approximately 500 feet in length and 30 inches high. The fence would be constructed of steel posts with a 10 foot spacing and ¼ inch hardware cloth similar to specifications used on the San Bernardino Wildlife Refuge. The fence line would be trenched to a depth of 18 inches to 2 feet using a small gas powered trenching machine. The equipment will be brought in using the same route that the backhoe will use. This fence will not be installed until the AGFD and USFWS were ready to translocate frogs, eggs or tadpoles to the project site. It is likely that this fencing would not need to be installed for a year or more as the AGFD and USFWS are still working on a statewide Safe Harbors document for frogs that allows adjacent land owners to be involved in conservation of frogs that may migrate to private ponds or springs.
- **Fish and Frog Transplant.** The project would consist of releasing Federally Endangered Gila topminnow, desert pupfish, and Chiricahua leopard frogs into the pool(s) at Little Joe Spring over a 5 year period. The initial stocking would consist of several hundred topminnow. Over the next two years additional topminnow will be added to Little Joe Spring. In conjunction with topminnow transplants, several hundred desert pupfish and several hundred leopard frog eggs and/or tadpoles would be released, thereby, creating a small aquatic vertebrate community comprised of two fish species and one frog species, each with genetically diverse founding populations. Fish and frogs (eggs/tadpoles) used for the translocation will come from an appropriate source as determined by the USFWS in cooperation with the AGFD with guidance from recovery plans and the latest biogeographic and genetic information. The exact quantity and timing of the releases would be decided by the AGFD and USFWS. The Arizona Game and Fish Department and U.S. Fish and Wildlife Service will be responsible for collecting and moving native fish and frogs (eggs and tadpoles). No topminnow or pupfish would be transplanted until the ponds are excavated and sufficient time has passed for water quality to stabilize and aquatic ecosystem functions related to the food web have progressed sufficiently.
- **Huachuca water umbel transplant.** In addition to fish and frogs, a single plant species is proposed for translocation to the site. The suitability of the ponds for Huachuca water umbel will be assessed by a qualified botanist and a suitable number of umbel plants moved to the project site. Huachuca water umbel plants used for the translocation will come from an appropriate source as determined by the USFWS with guidance from recovery plans and the latest biogeographic and genetic information. The exact quantity and timing of the releases would be decided by the USFWS. The U.S. Fish and Wildlife Service will be responsible for collecting and moving Huachuca water umbel to the project site. The BLM will work with the service on a site plan for maintaining habitat for the water umbel.
- **Information and Education.** A standard sign panel describing the aquatic ecosystem and conservation value of Little Joe Spring will be installed at the project site. This will require posts set into the ground to a depth of 2 feet.
- **Weed Control.** Equipment (power and hand tools) will be washed prior to entering the project area to prevent the introduction of weeds or weed seed.

No Action Alternative: A no-action alternative would be to leave Little Joe Spring wetland unaltered and to forgo the opportunity to reestablish biologically imperiled fish, frogs and plants at this site.

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES:

General Setting: Little Joe Spring is located within the 350 acre St. David Cienega Research Natural Area but is separated from the larger cienega by an earthen dike that impounds the spring flow and sediment. The drainage pattern in the area does not include the spring which limits runoff and sediment inputs to the wetland. The plant community is dominated by bulrush (*Scirpus americana*) and cattail (*Typha* sp.) which choke the open water to the point of creating an impenetrable, dense matt of vegetation. On the periphery of the cienega the majority of the vegetation is comprised of yerba mansa (*Amneopsis californicus*), mint (*Mentha* sp.), sedge (*Carex* sp.) and Baltic rush (*Juncus arcticus* var. *balticus*). This vegetation gives way to Sacaton (*Sporobolus wrightii*) and salt grass (*Distichlis spicata*). This vegetation association is classified as Juncus spp. – Carex association (243.321) using the Brown, Lowe and Pace classification system (1979).

Critical Elements: The following critical elements are not affected by the proposed action or alternatives because they do not occur in the proposed use area, or because of the nature of the proposed action: Air Quality, National Energy Policy, Wild and Scenic Rivers, Wilderness, Native American Religious Concerns, Prime Farm Land, Hazardous or Solid Wastes, Environmental Justice.

ACEC: The project area is within the St. David Cienega Research Natural Area ACEC. St. David Cienega has been impacted by dredging (Ted McRae, Safford Field Office, personal Com.) and a railroad grade (see figure 1). Little Joe Spring has been altered by a dike that physically separates it from St. David Cienega and impounds the spring. No nonnative fish or frogs have been detected at the spring. The vegetation has essentially choked the impoundment severely limiting the habitat suitability for fish, frogs and Huachuca water umbel.

Impacts of the Proposed Action: The excavation of pools for open water, bullfrog fencing and introduction of native fish, frogs and plants will enhance the ACEC's research potential for resulting in a positive impact. The proposed project would not violate the original intent of or purpose for the RNA while providing an opportunity to study the longevity and duration of quality of fish and frog habitat in a mature cienega ecosystem.

Impacts of the No Action Alternative: Little Joe Spring will remain in its current condition and continue to fill in with detritus from wetland plants eventually evolving into a meadow.

Threatened and Endangered Species: The project site is located inside a wetland that does not have any federally listed species present or suitable habitat.

Impacts of the Proposed Action: The project will allow for the opportunity for the establishment of self-sustaining populations of Gila topminnow, desert pupfish, Chiricahua leopard frog, and Huachuca water umbel with out affecting any federally listed or state listed species. This will improve the status of these species and move them closer to recovery. No detrimental effects to other listed species in the SPRNCA have been identified or are likely.

Impacts of the No Action Alternative: The opportunity for pro-active management for these species will not occur at this location.

Vegetation: Upland vegetation is mostly dominated by velvet mesquite, Acacia, creosote bush and blackbrush.

Impacts of the Proposed Action: Heavy equipment has the potential to damage vegetation that is crushed by its wheels. While the proposed action includes using the shortest possible route and avoiding vegetation, some plants will likely be damaged.

Impacts of the No Action Alternative: No impact.

Floodplain: The project area is not in a stream drainage (see Wetland/Riparian Zones).

Impacts of the Proposed Action: No impact.

Impacts of the No Action Alternative: No impact.

Cultural Resources: The project area may contain significant cultural and fossil resources hidden beneath the soil surface.

Impacts of the Proposed Action: No known cultural sites will be impacted by the proposed action. The project will not affect the characteristics of any site eligible for inclusion into the National Register of Historic Places. Any sites discovered during the project while excavating ponds or trenching require the temporary suspension of the project and consultation with the San Pedro Archaeologist.

Impacts of the No Action Alternative: No impact.

Wetlands/Riparian Zones: The area of analysis is within a wetland created by a perennial spring.

Impacts of the Proposed Action: The proposed project would have a modest negative impact on the wetland by setting back its progression towards a meadow (drier site). It will have a positive aspect in that the wetland will have a larger component of open water. The excavation to a depth of 3 feet will hold a greater volume of surface water by sacrificing up to 70 yards of sediment and up to 600 square feet of bulrush and cattail vegetation. Approximately 18,000 square feet of this vegetation will remain unaffected, slowly dropping detritus into the open water leading ultimately to its filling and choking over a period of decades. The wetland is in Properly Functioning Condition (USBLM 1999) now and its level of function and developmental potential will not be impaired by the excavation of sediments.

Impacts of the No Action Alternative: No change in wetland plant community.

Water Quality, Drinking or Ground: There is surface water at Little Joe Spring.

Impacts of the Proposed Action: Water quality will be affected for a single day by turbidity while pools are being excavated. This will result in a short-term negative effect to water quality.

Impacts of the No Action Alternative: No change in water quality from pool excavation.

Visual: The current visual aspect is of the larger St. David Cienega is of expansive, lush wetlands with almost no sign of structures. At Little Joe Spring there is a 5 ft tall dike, and a small concrete outlet.

Impacts of the Proposed Action: There would be about 150 yards of tire tracks leading from the rail road trail right of way to the spring. Upland plants would be largely unaffected, while 600 ft² of cattail and bulrush would be removed to create open water. The visual aspect would be enhanced by the replacement of a small portion of dense vegetation with open water that attracts watchable wildlife including birds.

The addition of sediments to the dike would change the topography of the dike by few inches if sediment is spread out evenly on the lee side. Under these circumstances, the existing plants would be anticipated to sprout through the additional layer of soil, thus creating a visual aspect very similar to the original visual quality within one to two years. The frog fence will be visible at close distance but will fade into the background beyond a few hundred yards as it is short and will be obscured by the dike.

Impacts of the No Action Alternative: No change in visual aspect.

Soils: Soils in the area of analysis are highly erodible and dispersive with visible gullies.

Impacts of the Proposed Action: The proposed action will provide a large measure of protection for erodible soils through the limited ingress and egress to the site using the shortest route and by avoiding vegetation. However, the soils in the area are erosive but there is little topographic relief to the project site which will limit soil movement resulting from the single entry of a backhoe and small trenching machine. Soil in this area is fine grained with little cover from vegetation and litter. Nonetheless, tire tracks will loosen soil for minor amounts of water and wind erosion in the future.

Impacts of the No Action Alternative: Soil erosion is expected to continue unabated in the area of analysis due to a general lack for vegetative cover.

Weeds: Weeds already occur in the San Pedro Riparian National Conservation area and have become an ecological problem in some cases. The project area is susceptible to the establishment of weeds if care is not taken to prevent the introduction of seeds.

Impacts of the Proposed Action: The proposed action will provide a large measure of protection for weed abatement through the washing of equipment brought into the area.

Impacts of the No Action Alternative: There would be no chance of weed establishment from the accidental release from seeds from equipment.

Cumulative Impacts: The cumulative impact of the project is the establishment of another habitat that supports listed species to offset declines in the species elsewhere in the region. This project in conjunction with similar efforts elsewhere in the state for these species will have a positive impact on Gila topminnow, desert pupfish, Chiricahua leopard frogs and Huachuca water umbel. Another cumulative impact will occur as a result of recurrent fire applied the St. David (including Little Joe Spring).

Cumulative Impacts of the Proposed Action: The proposed action is expected to be followed by some type of future species reintroductions at other spring within the San Pedro RNCA, Coronado National Forest, and other BLM Field Offices. Fire at the cienega will reduce the biomass of detritus laid down over time. This will extend the life of the cienega by reducing the rate of deposition. This will have a positive impact to Little Joe Spring and the newly created aquatic habitat. Fire and ash should not injure or kill fish, frogs or Huachuca water umbel.

Cumulative Impacts of the No Action Alternative: The cumulative impacts of the no action alternative would be the continued decline of federally listed species without this location for establishing replacement populations.

RESIDUAL IMPACTS: Residual impacts include improved status for up to four listed species, additional opportunities for the study of ecological processes, a small amount of additional surface erosion where equipment is brought in, and visual changes both positive and negative are expected from the proposed action.

Description of Mitigation Measures:

- 1) To mitigate disturbance to the soils, the backhoe would only be allowed to enter once and must exit along the same path as would the trenching machine to be used at a later date. A path following the route of least disturbance to vegetation and soil will be flagged prior to excavation work. Any tracks created by driving into the site will be erased or covered to prevent the detection and future use by the public.
- 2) To mitigate the potential establishment of weeds BLM would monitor the action area for noxious weeds following completion of the project. This will be done in addition to the washing of both heavy and hand equipment prior to entering the project area.
- 3) During construction, if any archaeological artifacts or features or fossils are encountered, work shall cease and the BLM archaeologist will be notified immediately. Work cannot resume until clearance is given by the BLM archaeologist.
- 4) Fencing will avoid "sky lining" and use materials with colors that blend with those of the surrounding landscape.

Compliance and Area Monitoring: Post project monitoring and maintenance will consist of site inspections, maintaining frog fencing and periodic assessment of habitat conditions and population levels. The route into the site will be inspected for the establishment of weeds. Any weeds detected will be eradicated while the population consists of only a few individuals.

PREPARERS

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Persons and Agencies Consulted:

Doug Duncan, USFWS Ecological Services
Mark Fredlake, BLM Wildlife Biologist
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Literature Cited

Brown, D.E., C.H. Lowe and C.P. Pace. 1979. A digitized classification system for the biotic communities of North America, with community (series) and association examples for the Southwest. Journal of the Arizona-Nevada Academy of Science (14, suppl-1):1-16

Jackson, W. ,T. Matinez, P. Culpin, W.L. Minckley, B. Shelby, P Summers, D. McGlothlin, and B, Van Haveren. 1987. Assessment of water conditions and opportunities in support of riparian values: BLM San Pedro River properties, Arizona, project completion report. U.S. Department of the Interior, Bureau of Land Management, Denver, Colorado. (pages 36-50).

U.S. Department of the Interior, Fish and Wildlife Service. 1984. Gila and Yaqui topminnow Recovery Plan. U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico.

U.S. Department of the Interior, Fish and Wildlife Service. 1993. Desert pupfish (*Cyprinodon macularius*) recovery plan. U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico.

Figure 1. Little Joe Spring portion of the St. David Cienega wetland is located to the far left of the aerial photo (2000, scale 1:12,000). Note dike (dark line) on east (right) side of wetland.

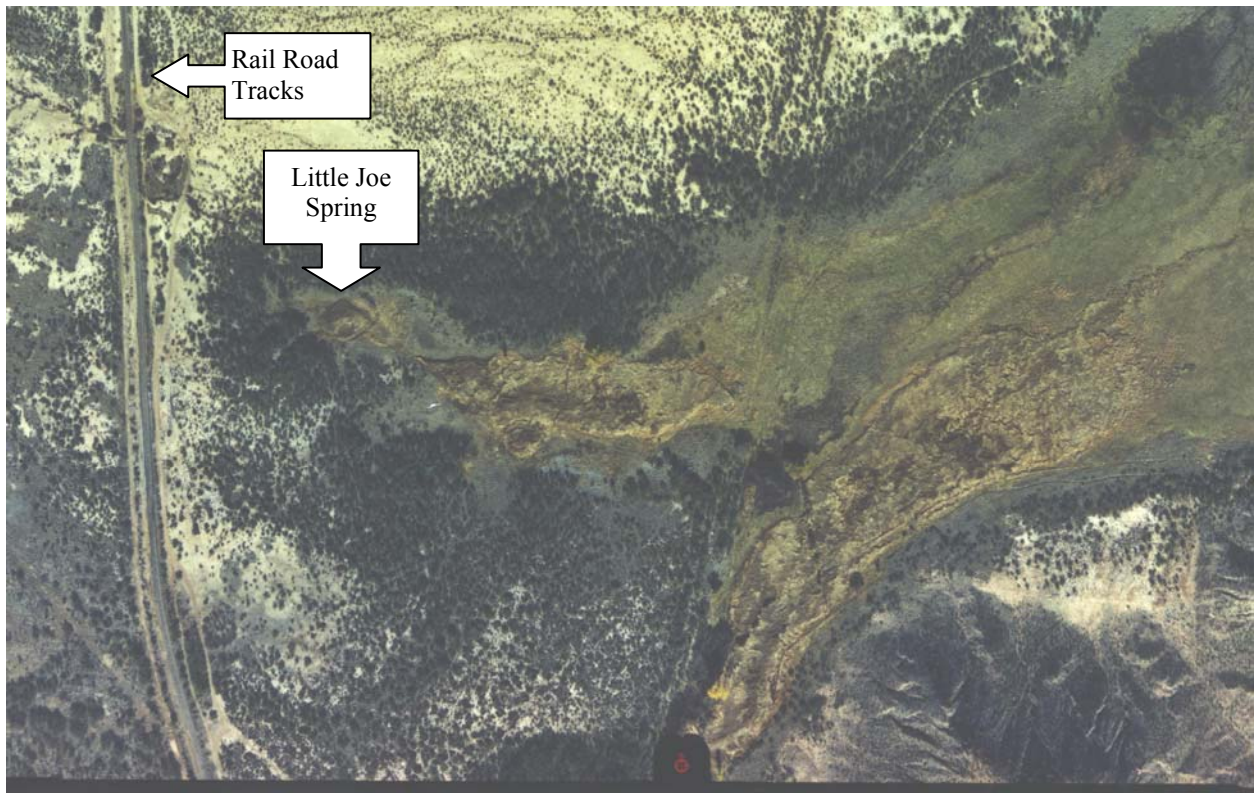


Figure 2. Location map for Little Joe Spring, San Pedro RNCA

